0043686

9212L005-WES-971

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD
RFW #: 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

GC/MS VOLATILE

One (1) soil sample was collected on 12-07-92.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 12-17-92.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Non-target compounds were not detected in these samples.

2. All system monitoring compound (surrogate) recoveries were within EPA QC limits.

3. All matrix spike recoveries were within EPA QC limits.

4. The laboratory blank contained the common contaminant Acetone at a level less than the CRQL.

5. Internal standard areas were outside QC limits for sample B07Q13 and B07Q13 MSD. CLP SOW 03/90 re-analysis requirements were met.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

01-14-93
Date

sma/voa/12-005v.cn

Westinghouse Hanford Company

NONCONFORMANCE REPORT

1. Page 1 of 1

2. Preprinted No. 051936

QA Log No.

3. P. O., W. O., or Job Control No.	4. System/End Use	5. Item/Material	6. Dwg./Spec./Other No.	7. Rev.
N/A	RI/FS	SAMPLES	SEE DESCRIPTION	N/A

8. Program/Project/Other	9. Safety Class	10. ASME Code Items
100-IU-5	N/A	☐ Yes ☒ No (If yes, notify authorized inspector)

11. Supplier Name/Address

ENVIRONMENTAL FIELD SAMPLING SERVICES

12. Notification of Potential Occurence Required ☐ Yes ☒ No

13. Code: Lot/Heat/Serial	14. Lot Size	15. Sample	16. Qty. Acc.	17. Inspection Criteria
N/A	1	1	0	☐ Dwg. ☐ Spec. ☐ Insp. Plan ☒ Other WHC-CM-7-7, EII 5.1, REV 0, SEC 6.1

18. Item	19. Description of Nonconformance (list serial no. where applicable)	22. Disposition, Justification, and Instructions
	AS STATED IN WHC-CM-7-7, EII 5.1, REV.0, SEC 6.1, THERE WILL BE ONLY ONE UNIQUE HEIS NUMBER PER SAMPLE NUMBER. CONTRARY TO THE ABOVE, HEIS SAMPLE NUMBER B07Q13 V CANCEL BRMC 1/13/94	

20. Originator's Signature	Date	23. Design Document Change Required? ☐ Yes, Doc. No. _____ ☐ No
21. Cognizant QA Manager's Signature	Date	24. Corrective Action Required? ☐ Yes, No. _____ ☐ No

Disp. App.

25. Cognizant Engineer	Date	26. Technical Rep.	Date	Signature/Org.	Date
QA Engineer	Date	Signature/Org.	Date	Signature/Org.	Date

Close

27. Accept _____ Reject _____ Follow on NCR _____ QA/C Personnel _____ Date _____

A-7310-104 (10/91)

WESTON Analytics Use Only
9212L005

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client Westinghouse-Hanford
Est. Final Proj. Sampling Date
Work Order # 0d0108-003-001-9999-00
Project Contact/Phone #
AD Project Manager Coc Edwards
QC: CLP Del CLP TAT 35 DAY
Date Rec'd 12/12/00 Date Due 1/16/03
Account # WS-HANFORD

	VOA	BNA	Pest PCB	Herb	[illegible]	[illegible]	TPH	Metal	CN	Radio Chem	Total [illegible]
Refrigerator #	1	6			2	1	6	2		8/6	
#/Type Container Liquid	1AG	1AG			1GL		1GL	1P		1GL	
#/Type Container Solid											
Volume Liquid	125	250			250		250	250		4 Lit	
Volume Solid											
Preservatives	—	—			—	—	—	—		—	
ANALYSES REQUESTED (ORGANIC / INORG)	VOA	BNA	Pest PCB	Herb	[illegible]	[illegible]	TPH	Metal	CN	Radio Chem	Total [illegible]
WESTON Analytics Use Only	OG324H	OG325H			[illegible]	[illegible]	[illegible]	See Below		ISUB	ITHard

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest PCB	Herb	[illegible]	[illegible]	TPH	Metal	CN	Radio Chem	Total [illegible]
001	807013			S	12/7/00		X	X			X	X	X	X		X	X
	Radio chem = Gamma Spec.																
	metals = HSL + Zr																

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

DATE/REVISIONS: [illegible]
1
2
3
4
5
6

Special Instructions:
Run (1) ms/msd
92-400 Temp = 2.8°C
ORIGINAL & WRITTEN

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
EMERY	[illegible]	12/8/00	430		[illegible]		
	[illegible] 12/12/00						

Discrepancies Between Samples, Labels and COC Record? Y or N
NOTES:

WESTON Analytics Use Only

Samples were:
1) Shipped X or Hand Delivered
Airbill # [illegible]
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N

0000002

~~0 0 9 6 9 0 3~~

Westinghouse Hanford Company	CHAIN OF CUSTODY	002805

ustody Form Initiator R.Z. Stettler Ron Arnold

ompany Contact J... Frain — Telephone 509) 376-8941

roject Designation/Sampling Locations White Bluffs — Collection Date 12-7-92

...king Acid Crib 100-EU-3 ...F# ...

ce Chest No. ______ Field Logbook No. EFL 1062

Bill of Lading/Airbill No. ______ Offsite Property No. ______

Method of Shipment Emery Air Express Overnight Delivery

Shipped to Weston

Possible Sample Hazards/Remarks Unknown

Sample Identification

[illegible]

☐ Field Transfer of Custody — **CHAIN OF POSSESSION** — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Relinquished by: [illegible]	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: Temp? [illegible]

A-6000-407 (12/90)

0n00004

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST C of C # 2825

Collector RZ STEFFLER Date 12-7-92

Company Contact JILL FRAIN/RON MITCHELL Telephone (509) 376-8941

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested
B07Q13	S	12-7-92	1005	(1) 250ml. plastic TAL METALS (CLP)
				(1) 250ml. plastic ANIONS,F,CL,SO4,PO4 (EPA 300.0) NO2,NO3 (EPA 353.2) AMMONIA (EPA 350.2) pH (9040)
				(1) 250 ml. plastic ICP METALS FOR Zr. (6010)
				(1) 125 ml. amber glass VOA (CLP)
				(1) 250 ml. amber glass SEMI VOA (CLP)
				(1) 250 ml. amber glass TPH diesal range (8015M)
				(1) 250 ml. amber glass TPH heavier than diesal range (8015M)
				(1) 250 ml. plastic CALCIUM CARBONATE (EPA 130.2)
				(1) 1000 ml. glass GAMMA SPEC. (RC-30)
	S			(1) 250 ml. plastic TAL METALS (CLP)
				(1) 250 ml. plastic ANIONS F,Cl,SO4 PO4 (EPA 300.0) NO2,NO3 (EPA 353.2) AMMONIA (EPA 350.2) pH (9040)
				(1) 250 ml. plastic ICP METALS for Zr. (6010)
				(1) 125 ml. amber glass VOA (CLP)
				(1) 250 ml. amber glass SEMI VOA (CLP)
				(1) 250 ml. amber glass TPH diesal range (8015M)
				(1) 250 ml. amber glass TPH heavier than diesal range (8015M)
				(1) 250 ml. plastic CALCIUM CARBONATE (EPA 130.2)
				(1) 1000ml. glass GAMMA SPEC. (RC-30)

*Type of Sample: A = Air; DL = Drum Liquids; DS = Drum Solids; L = Liquid; O = Oil; S = Soil; SE = Sediment; SL = Sludge; SO = Solid; T = Tissue; W = Water; WI = Wipe; X = Other

Field Information SAF # 92-400

Special Handling and/or Storage SAMPLES TO MAINTAIN 4 DEGREES C. PRIOR TO ANALYSIS.

Possible Sample Hazards UNKNOWN NOTHING DETECTABLE WITH FIELD INSTRUMENTS

A-6000-406 (06/91)

0n00005

AIR OVERNIGHT

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WESTINGHOUSE HANFORD		WT3-9-0122 # 27

PART I – TO BE COMPLETED BY ORIGINATOR

Department PROCESSING & ANALYTICAL LAB	Section ANALYTICAL CHEMISTRY	Unit SAMPLING & MOBILE LAB

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing EMERY AIR EXPRESS ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
WESTON LAB 208 Welsh Pool Road Lionmille PA 19341	JOSIE KING Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	POLYCOOLER. SAMPLES PACKED IN PLASTIC BAGS AND STORED IN WET ICE. SAMPLE #B07Q13 COOLER # Poly SML-222	
WEIGHT 10 lbs 51 lbs		

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

SAMPLES REQUIRE ANALYSIS THAT ARE NOT PRESENTLY AVAILABLE AT THIS SITE.

SAF #92-400
COC #002805

BILL OF LADING # 251900 7513

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No	Date
		12

Location of Property (Area & Bldg)	Contact	Phone
200 WEST AREA/202-S	R. Z. Steffler	373-9146

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
12/08/92	PF52R/CRG CODE: 12410	N/A

Originated By	Date	Authorized By	Date
R. Z. Steffler	12/08/92	R. A. Meznarich RA 11/	12/08/92
Signature and Name of Property Control	Custodian Date	Property Management Approval	Date

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No	Date Issued	Purchase Order No.	Date Issued
Date 12 5 92				

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Green – Property Control Custodian (Issuing Office) Yellow – Retain Pink – Originator

0 0 0 0 0 0 6

FORM OF PAYMENT

Check ☐ C.O.D. ☐ R.C.O.D. ☐

Bill to Shipper ☒ Bill to Consignee ☐ Third Party Billing ☐

EMERY WORLDWIDE

A CF Company

SERVICES **

UNITED STATES / CANADA

Same Day (Extra Charges) ☐ Standard Air ☐ Documents ☐

AM ☐ PM ☐ Preferred ☐ Customs Clearance ☐

Second Day ☐ Sat. Del. ☐ Standard ☐ Delivery ☐

Shipper's Account Number

E 850881585

Date 12-10-92 Origin PSC Shipment No. 251900757 9

From:

WESTINGHOUSE SHIPPING DEPT(509)375-6655
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA Canada ☐

To:

JOSIE KING
RF WESTON INC
208 WESTON WELSH POOL ROAD Hold for Pick Up ☐
LIONVILLE PA Canada ☐

Tariff Dest. Gateway

Check if Collect ☐

EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation

Customer's Reference Numbers

12410 pg3BE W93-0-0122 #33 99352

E Consignee's Account Number 19341

Description	Dimensions (Pcs, L, W, H)	Total Pieces	Total Weight
1 POLYCOOLER SAMPLES KT-25	1 27 16 17	1	58#

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)

Declared Value $

251900757 9

Remarks

SATURDAY DELIVERY

Zip Ship ☐

For shipments within the 50 United States Shipper has the option to check the box and, by checking, agrees that the Zip Ship conditions, described in the area to the right, apply.

Mark if Emery Packaging is used

Urgent Letter 9X12 ☐ Urgent Pack 12X15 ☐

Shipper's Signature X

International Shipments

Fed. Domestic ☐ Commodity Code

Third Party Account Number mandatory for Third Party Billing. E

Third Party Account Number

International Customs Value International Insurance

Base Charge

Total Transportation Charges

Other Charges/Advance at Origin OC/AO- $

3-PHL-54

Terms and Conditions on Back

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 01/11/93 08:11

RFW Batch Number: 9212L005 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1a

	Cust ID:	BO7Q13	BO7Q13	BO7Q13	VBLK
Sample Information	RFW#:	001	001 MS	001 MSD	92LVR178-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	107 %	99 %	102 %	106 %
	Bromofluorobenzene	98 %	89 %	90 %	96 %
	1,2-Dichloroethane-d4	86 %	94 %	93 %	89 %
Chloromethane		10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U
Methylene Chloride		6 J	6 J	6 J	10 U
Acetone		2 JB	4 JB	4 JB	2 J
Carbon Disulfide		10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	98 %	97 %	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U
Carbon Tetrachloride		10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U
Trichloroethene		10 U	100 %	98 %	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U
Benzene		10 U	77 %	71 %	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U
Tetrachloroethene		10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U
Toluene		10 U	97 %	93 %	10 U

*= Outside of EPA CLP QC limits.

	Cust ID:	B07Q13	B07Q13	B07Q13	VBLK
	RFW#:	001	001 MS	001 MSD	92LVR178-MB1
Chlorobenzene		10 U	97 %	96 %	10 U
Ethylbenzene		10 U	10 U	10 U	10 U
Styrene		10 U	10 U	10 U	10 U
Xylene (total)		10 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

1A 0 0 0 0 0 2 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

B07Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL Lab Sample ID: 9212L005-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: R121706

Level: (low/med) LOW Date Received: 12/12/92

% Moisture: not dec. 2 Date Analyzed: 12/17/92

GC Column: DB624 ID: .53(mm) Dilution Factor: 1.00

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	J
67-64-1	Acetone	2	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

0 0 0 0 2 3 CLIENT SAMPLE NO.

B07Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: RI21706

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: not dec. 2

Date Analyzed: 12/17/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

Roy F. Weston, Inc. - Lionville Laboratory

GC SCAN

Report Date: 01/20/93 08:04

RFW Batch Number: 9212L005 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-9999 Page: 1

	Cust ID:	B07Q13	B07Q13	B07Q13	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	92LLC314-MB1	92LLC314-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	p-Terphenyl	90 %	91 %	94 %	97 %	104 %
Diesel		4.00 U	66 %	62 %	4.00 U	71 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD
RFW #: 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

GC SCAN

One (1) soil sample was collected on 12-07-92.

The sample and its associated QC samples were extracted on 12-21-92 and analyzed by a modified Method 8100 for Diesel Range Petroleum Hydrocarbons on 01-01-93.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The surrogate recoveries of p-Terphenyl were within the range of 90% to 104%.

2. The blank spike recovery of Diesel fuel was 71%.

3. The matrix spike recoveries of Diesel fuel were 66% and 62%.

4. The multi-level Diesel fuel standards provided calibration factors with a Relative Standard Deviation (RSD) of less than 20%.

5. Seven (7) to ten (10) hydrocarbon (HC) peaks were used to quantitate standards, spikes and samples.

6. Continuing calibration criteria (20%) were met for all continuing standards.

7. <u>GC CONDITIONS</u>

Column: SPB-5, 30m x 0.53 mm (ID)

<u>OVEN TEMPERATURE</u>

Injection:	280°C
FID:	300°C
Oven:	40°C for 5 min.
	10°C/min. to 250°C
	Hold 17 minutes
Flow:	30 mL/min Helium

Sara K Brantley

02.03.93
Date

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

sma/misc/12-005.gc

Roy F. Weston, Inc. - Lionville Laboratory
Semivolatiles by GC/MS, HSL List
Report Date: 01/19/93 10:12

RFW Batch Number: 9212L005 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1a

	Cust ID:	BO7Q13	BO7Q13	BO7Q13	SBLK	SBLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	92LE2117-MB1	92LE2117-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	69 %	95 %	93 %	39 %	67 %
	2-Fluorobiphenyl	83 %	103 %	95 %	44 %	84 %
	Terphenyl-d14	82 %	87 %	83 %	48 %	82 %
	Phenol-d5	80 %	108 %	98 %	45 %	76 %
	2-Fluorophenol	77 %	102 %	93 %	53 %	86 %
	2,4,6-Tribromophenol	74 %	77 %	71 %	44 %	70 %
	2-Chlorophenol-d4	75 %	105 %	98 %	44 %	80 %
	1,2-Dichlorobenzene-d4	64 %	94 %	91 %	37 %	75 %
Phenol		340 U	107 * %	103 * %	330 U	77 %
bis(2-Chloroethyl)ether		340 U	340 U	340 U	330 U	330 U
2-Chlorophenol		340 U	114 * %	106 * %	330 U	84 %
1,3-Dichlorobenzene		340 U	340 U	340 U	330 U	330 U
1,4-Dichlorobenzene		340 U	101 %	96 %	330 U	77 %
1,2-Dichlorobenzene		340 U	340 U	340 U	330 U	330 U
2-Methylphenol		340 U	340 U	340 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		340 U	340 U	340 U	330 U	330 U
4-Methylphenol		340 U	340 U	340 U	330 U	330 U
N-Nitroso-di-n-propylamine		340 U	107 %	103 %	330 U	65 %
Hexachloroethane		340 U	340 U	340 U	330 U	330 U
Nitrobenzene		340 U	340 U	340 U	330 U	330 U
Isophorone		340 U	340 U	340 U	330 U	330 U
2-Nitrophenol		340 U	340 U	340 U	330 U	330 U
2,4-Dimethylphenol		340 U	340 U	340 U	330 U	330 U
bis(2-Chloroethoxy)methane		340 U	340 U	340 U	330 U	330 U
2,4-Dichlorophenol		340 U	340 U	340 U	330 U	330 U
1,2,4-Trichlorobenzene		340 U	110 * %	106 %	330 U	89 %
Naphthalene		340 U	340 U	340 U	330 U	330 U
4-Chloroaniline		340 U	340 U	340 U	330 U	330 U
Hexachlorobutadiene		340 U	340 U	340 U	330 U	330 U
4-Chloro-3-methylphenol		340 U	99 %	98 %	330 U	77 %
2-Methylnaphthalene		340 U	340 U	340 U	330 U	330 U
Hexachlorocyclopentadiene		340 U	340 U	340 U	330 U	330 U

*= Outside of EPA CLP QC limits.

Cust ID:	BO7Q13	BO7Q13	BO7Q13	SBLK	SBLK BS
RFW#:	001	001 MS	001 MSD	92LE2117-MB1	92LE2117-MB1
2,4,6-Trichlorophenol	340 U	340 U	340 U	330 U	330 U
2,4,5-Trichlorophenol	840 U	840 U	840 U	840 U	840 U
2-Chloronaphthalene	340 U	340 U	340 U	330 U	330 U
2-Nitroaniline	840 U	840 U	840 U	840 U	840 U
Dimethylphthalate	340 U	340 U	340 U	330 U	330 U
Acenaphthylene	340 U	340 U	340 U	330 U	330 U
2,6-Dinitrotoluene	340 U	340 U	340 U	330 U	330 U
3-Nitroaniline	840 U	840 U	840 U	840 U	840 U
Acenaphthene	340 U	104 %	99 %	330 U	79 %
2,4-Dinitrophenol	840 U	840 U	840 U	840 U	840 U
4-Nitrophenol	840 U	125 * %	118 * %	840 U	74 %
Dibenzofuran	340 U	340 U	340 U	330 U	330 U
2,4-Dinitrotoluene	340 U	123 * %	121 * %	330 U	85 %
Diethylphthalate	340 U	340 U	340 U	330 U	330 U
4-Chlorophenyl-phenylether	340 U	340 U	340 U	330 U	330 U
Fluorene	340 U	340 U	340 U	330 U	330 U
4-Nitroaniline	840 U	840 U	840 U	840 U	840 U
4,6-Dinitro-2-methylphenol	840 U	840 U	840 U	840 U	840 U
N-Nitrosodiphenylamine (1)	340 U	340 U	340 U	330 U	330 U
4-Bromophenyl-phenylether	340 U	340 U	340 U	330 U	330 U
Hexachlorobenzene	340 U	340 U	340 U	330 U	330 U
Pentachlorophenol	840 U	102 %	102 %	840 U	87 %
Phenanthrene	340 U	340 U	340 U	330 U	330 U
Anthracene	340 U	340 U	340 U	330 U	330 U
Carbazole	340 U	340 U	340 U	330 U	330 U
Di-n-butylphthalate	100 J	97 J	82 J	330 U	26 J
Fluoranthene	340 U	340 U	340 U	330 U	330 U
Pyrene	340 U	99 %	96 %	330 U	82 %
Butylbenzylphthalate	340 U	340 U	340 U	330 U	330 U
3,3'-Dichlorobenzidine	340 U	340 U	340 U	330 U	330 U
Benzo(a)anthracene	340 U	340 U	340 U	330 U	330 U
Chrysene	340 U	340 U	340 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	36 J	30 J	27 J	330 U	330 U
Di-n-octyl phthalate	340 U	340 U	340 U	330 U	330 U
Benzo(b)fluoranthene	340 U	340 U	340 U	330 U	330 U
Benzo(k)fluoranthene	340 U	340 U	340 U	330 U	330 U
Benzo(a)pyrene	340 U	340 U	340 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	340 U	340 U	340 U	330 U	330 U
Dibenz(a,h)anthracene	340 U	340 U	340 U	330 U	330 U
Benzo(g,h,i)perylene	340 U	340 U	340 U	330 U	330 U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

WESTON MANAGERS DESIGNERS CONSULTANTS

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD
RFW #: 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

SEMIVOLATILE

One (1) soil sample was collected on 12-07-92.

The sample and its associated QC samples were extracted on 12-18-92 and analyzed according to criteria set forth in CLP SOW 03/90 for TCL Semivolatile target compounds on 01-08,11,13-93.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Non-target compounds were detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. Nine (9) of twenty-two (22) matrix spike recoveries were outside EPA QC limits. They were slightly biased high.

4. All blank spike recoveries were within EPA QC limits.

   The method blank 92LE2117-MB1 was contaminated with Di-n-butylphthalate from an unknown source. A reserve non-GPC'd portion of the extract was analyzed and reported.

5. All internal standard area and retention time criteria were met.

Steven R. Brenthurst

01.26.93

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

Date

kls/12-005b.cn

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

0000028 CLIENT SAMPLE NO.

BO7Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M011106

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N)

Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 01/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	840	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	340	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

0000030 CLIENT SAMPLE NO.

BO7Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M011106

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N)

Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 01/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
51-28-5	2,4-Dinitrophenol	840	U
100-02-7	4-Nitrophenol	840	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-butylphthalate	100	J
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	36	J
117-84-0	Di-n-octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenz(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B07Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M011106

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N)

Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 01/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

Number TICs found: 12

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		ALDOL CONDNEESATE	6.52	500	JAB
2.		UNKNOWN	6.77	200	J
3.		ALDOL CONDENSATE	7.00	2000	JAB
4.		ALDOL CONDENSATE	7.80	1000	JA
5.		ALDOL CONDENSATE	8.13	900	JA
6.		UNKNOWN	8.62	80	J
7.		ALDOL CONDENSATE	8.68	200	JA
8.		ALDOL CONDENSATE	8.83	300	JA
9.		PHTHALATE	19.82	300	JB
10.		UNKNOWN	26.85	200	J
11.		UNKNOWN	27.93	100	J
12.		UNKNOWN	30.60	80	J

0 0 0 0 0 0 4

WESTON.

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client : WESTINGHOUSE HANFORD
RFW# : 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

INORGANIC

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards (blank spikes) were within the control limits of 80-120%.

4. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

5. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limits. All %RPD were within the 20% guidance limit.

6. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

7. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

1.18.93
Date

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

pas/i12-005

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/15/93

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9212L005

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B07Q13	% Solids	98.1	%	0.10
		Chloride by IC	27.0	MG/KG	1.3
		Fluoride by IC	3.2	MG/KG	2.5
		Phosphate by IC	4.4	MG/KG	1.3
		Sulfate by IC	23.2	MG/KG	1.3
		Hardness	50.9	MG/KG	17.0
		Nitrate Nitrite	2.7	MG-N/KG	0.51
		Ammonia, as N	6.9	MG/KG	1.3
		pH	6.7	PH UNITS	0.010

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client : WESTINGHOUSE HANFORD
RFW# : 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

CLP METALS

One (1) soil sample was collected on 12-07-92.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 3/90.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analysis:

1. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.

2. All ICV and CCV values were within control limits.

3. All ICB and CCB values were within control limits.

4. All preparation blank values were within control limits.

5. All LCS results were within the 80-120% control limits.

6. All matrix spike recoveries were within the 75-125% control limits with the exception of mercury. All exceptions are flagged with a "N" on the CLP forms.

7. All duplicate analyses were within the 20% RPD control limit with the exception of lead. All exceptions are flagged with a "*" on the CLP forms.

8. The code CV is currently in use by the laboratory for both mercury instruments in operation (HG1 and HG2). HG1 is complete with autosampler and software, but still requires manual digestion; HG2 is operated by the analyst, produces a strip chart and also requires manual digestion.

9. HG1 requires less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 ml. For soils, 0.1 gram of sample is taken to a final volume of 50 ml (including all reagents).

10. Quarterly Detection Limits, ICP Interelement Correction Factors and ICP Linear Ranges for IC3 are included in this package, but do not appear on EDD.

11. The graphite furnace time that appears on form XIV is the time of the first injection. The time that appears on the data is the print time.

1.13.93
Date

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

mlj/clp-met.nar

0 0 0 0 1 2

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD
RFW #: 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

CLP METALS ADDENDUM

1. Following Exhibit E, Section V, Item 10, page E-23 of the USEPA Statement of Work for Inorganics Analysis, Document Number ILM02.0 ICP Instrument Detection Limits (IDLs) are reported for two (2) ICP instruments. The instrument identification numbers are "IC1" and "IC3". The highest IDL for the two instruments is used for reporting concentration values in this sample data package.

2. A discrepancy exists between raw data and Form XIVs analytical spikes recovery calculations performed for graphite furnace AA analytes. Instrument software calculates spike recoveries based on absolute values below the IDL for sample results. This is hard-coded by the vendor and is currently not correctable. CLP convention (SOW ILM02.0, Exhibit E, Section V, Item 6, page E-20) requires that when values fall below the IDL, the sample result is equal to zero (0) for the purposes of calculating the percent recovery. The Form XIVs contain the correct calculation.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

1.13.93
Date

mlj\clp-met.nar

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/12/93

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9212L005

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BO7Q13	Silver, Total	2.0	u	MG/KG	2.0
		Aluminum, Total	5370		MG/KG	40.8
		Arsenic, Total	2.4		MG/KG	2.0
		Barium, Total	52.3		MG/KG	40.8
		Beryllium, Total	1.0	u	MG/KG	1.0
		Calcium, Total	3250		MG/KG	1020
		Cadmium, Total	1.0	u	MG/KG	1.0
		Cobalt, Total	10.2	u	MG/KG	10.2
		Chromium, Total	9.5		MG/KG	2.0
		Copper, Total	13.2		MG/KG	5.1
		Iron, Total	14600		MG/KG	20.4
		Mercury, Total	0.10	u	MG/KG	0.10
		Potassium, Total	1410		MG/KG	1020
		Magnesium, Total	3670		MG/KG	1020
		Manganese, Total	143		MG/KG	3.1
		Sodium, Total	1020	u	MG/KG	1020
		Nickel, Total	13.6		MG/KG	8.2
		Lead, Total	3.6		MG/KG	0.61
		Antimony, Total	12.2	u	MG/KG	12.2
		Selenium, Total	1.0	u	MG/KG	1.0
		Thallium, Total	2.0	u	MG/KG	2.0
		Vanadium, Total	36.0		MG/KG	10.2
		Zinc, Total	40.4		MG/KG	4.1
		Zirconium, Total	40.8	u	MG/KG	40.8

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

B07Q13

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP005

Matrix (soil/water): SOIL Lab Sample ID: 921200501

Level (low/med): LOW Date Received: 12/12/92

% Solids: 98.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5370.00			P
7440-36-0	Antimony	12.20	U		P
7440-38-2	Arsenic	2.40			F
7440-39-3	Barium	52.30			P
7440-41-7	Beryllium	.29	B		P
7440-43-9	Cadmium	1.43	U		P
7440-70-2	Calcium	3250.00			P
7440-47-3	Chromium	9.50			P
7440-48-4	Cobalt	8.40	B		P
7440-50-8	Copper	13.20			P
7439-89-6	Iron	14600.00			P
7439-92-1	Lead	3.60		*	F
7439-95-4	Magnesium	3670.00			P
7439-96-5	Manganese	143.00			P
7439-97-6	Mercury	.05	U	N	CV
7440-02-0	Nickel	13.60			P
7440-09-7	Potassium	1410.00			P
7782-49-2	Selenium	.41	U	W	F
7440-22-4	Silver	2.04	U		P
7440-23-5	Sodium	165.00	B		P
7440-28-0	Thallium	.41	U		F
7440-62-2	Vanadium	36.00			P
7440-66-6	Zinc	40.40			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

HCRL-WHC/9316-T-93-014

9212 L005-WES-971

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title: Prelim. QA Rpts. Case # 9212L005 (Volatiles)

Document Number: HCRL-WHC/9316-L-93-C13 Date: 4/20/93

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Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports X
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
1201 Jadwin Avenue, Suite 204
Richland, WA 99352
FAX 509 946 4203
509 946 4344

J-2978-56

April 20, 1993

Ms. Jill Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
Roy F. Weston Case Number 9212L005 - Volatile Organics

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of one low level soil sample submitted for analysis for volatile organics. The sample results were fully validated. In addition, all of the supporting quality control summaries were reviewed.

The samples were analyzed by Roy F. Weston using the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including GC/MS tuning, surrogates, matrix spike/matrix spike duplicates, continuing calibrations, and compound identifications), and quantitation limit requirements were met for this case with the exception of the following: a low concentration of acetone was detected in the method blank; methylene chloride was reported below the contract required quantitation limit (CRQL); and the d_5-chlorobenzene internal standard percent recovery was below the 50 to 200 percent control limit.

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following general trends resulted in the qualification of the sample data. All qualified data are discussed in Attachments 3 and 5.

Acetone was detected in the method blank. The acetone concentration in the sample was less than 10 times the blank concentration. Therefore, the acetone concentration for the sample was qualified as undetected (U), and the associated quantitation level was raised to the CRQL.

A trace concentration of methylene chloride was detected in the sample. As the methylene chloride concentration was near the instrument detection limit and was below the CRQL, the concentration was qualified as an estimate (J).

The d_5-chlorobenzene internal standard percent recovery was below the 50 to 200 percent control limit. Target compounds associated with this internal standard were not detected in the sample, and were therefore qualified as having estimated quantitation limits (UJ).

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#134:RL1753.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-013

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

ATTACHMENT 1

Glossary of Data Qualifiers

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates the presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BO7Q13

Lab Name: Rov F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: R121706

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: not dec. 2

Date Analyzed: 12/17/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	J
67-64-1	Acetone	2	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E 0 0 0 0 2 3 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: R121706

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: not dec. 2

Date Analyzed: 12/17/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

ATTACHMENT 3

Summary of Data Qualifications

(9)

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
2-hexanone	UJ	B07Q13	Low I.S. area for CBZ
4-methyl-2-pentanone	↓	↓	↓
tetrachloroethene			
1,1,2,2-tetrachloroethane			
toluene			
chlorobenzene			
ethylbenzene			
styrene			
xylene	↓	↓	↓
Acetone	J at CRQL	B07Q13	Blank contamination
trans-1,3-dichloropropene	(UJ)	B07Q13	Low I.S. area for CBZ
cis-1,3-dichloropropene			
1,1,2-trichloroethene			
dibromochloromethane			
bromoform	↓	↓	↓

√ mc 4/14/93

ATTACHMENT 4

As Qualified Data Summary

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0 0 0 0 0 2 CLIENT SAMPLE NO.

B07Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL — Lab Sample ID: 9212L005-001

Sample wt/vol: 5.00 (g/mL) G — Lab File ID: R121706

Level: (low/med) LOW — Date Received: 12/12/92

% Moisture: not dec. 2 — Date Analyzed: 12/17/92

GC Column: DB624 ID: .53(mm) — Dilution Factor: 1.00

Soil Extract Volume: (uL) — Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
74-87-3	Chloromethane	10	U	U
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	6	J	J
67-64-1	Acetone	2	JB	10 U
75-15-0	Carbon Disulfide	10	U	U
75-35-4	1,1-Dichloroethene	10	U	
75-34-3	1,1-Dichloroethane	10	U	
540-59-0	1,2-Dichloroethene (total)	10	U	
67-66-3	Chloroform	10	U	
107-06-2	1,2-Dichloroethane	10	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	10	U	
56-23-5	Carbon Tetrachloride	10	U	
75-27-4	Bromodichloromethane	10	U	
78-87-5	1,2-Dichloropropane	10	U	
10061-01-5	cis-1,3-Dichloropropene	10	U	UJ
79-01-6	Trichloroethene	10	U	U
124-48-1	Dibromochloromethane	10	U	UJ
79-00-5	1,1,2-Trichloroethane	10	U	UJ
71-43-2	Benzene	10	U	U
10061-02-6	trans-1,3-Dichloropropene	10	U	UJ
75-25-2	Bromoform	10	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	10	U	
79-34-5	1,1,2,2-Tetrachloroethane	10	U	
108-88-3	Toluene	10	U	
108-90-7	Chlorobenzene	10	U	
100-41-4	Ethylbenzene	10	U	
100-42-5	Styrene	10	U	
1330-20-7	Xylene (total)	10	U	

4/13/93

4/13/93

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

0 0 0 0 2 3 CLIENT SAMPLE NO.

B07Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: R121706

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: not dec. 2

Date Analyzed: 12/17/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

✓ cm 4/14/93

✓ AS 4/13/93

ATTACHMENT 5

Data Review Supporting Documentation

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: White Bluffs Pickling Acid Cribs	REVIEWER: CMC	DATE: 4/2/93
LABORATORY: Weston	CASE: 92121005	SDG:
SAMPLES/MATRIX:		
(soil) B07Q13		
		Level 2 Validation

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓	—	—
Data Summary		✓	—	—
Chain-of-Custody		✓	—	—
QC Summary				
Surrogate report		✓	—	—
MS/MSD report		✓	—	—
Blank summary report		✓	—	—
GC/MS tuning report		✓	—	—
Internal standard summary report		✓	—	—
Sample Data				
Sample reports		✓	—	—
TIC reports for each sample		✓	—	—
RIC reports for all samples		✓	—	—
Raw and corrected spectra for all detected results		✓	—	—
Raw and corrected library search data for all reported TIC		—	—	✓
Quantitation and calculation data for all TIC		—	—	✓
Standards Data				
Initial calibration report		✓	—	—
RIC and quantitation reports for initial calibration		✓	—	—
Continuing calibration reports		✓	—	—
RIC and quantitation reports for cont. calibrations		✓	—	—
Internal standard summary report		✓	—	—
Raw QC Data				
Tuning report, spectra and mass lists		✓	—	—
Blank analysis reports		✓	—	— CMC
TIC reports for all blanks		✓	—	—
RIC and quantitation reports for blanks		✓	—	—
Raw and corrected spectra for all detected results in blanks		✓	—	—
Raw and corrected library search data for all reported TIC		—	—	✓

(9)

Data Package Item	Present?:	Yes	No	N/A
Quantitation and calculation data for all TIC				✓
MS/MSD report forms		✓		
RIC and quantitation reports for MS/MSD		✓		
Additional Data				
Moisture/% solids data sheets	(in other pkg.)			✓
Reduction formulae				✓
Instrument time logs				✓
Chemist notebook pages				✓
Sample preparation sheets		✓		✓ Level

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? (Yes) No N/A

Has the laboratory made any calculation or transciption errors? Yes No (N/A) Level 2

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? Yes No (N/A)

Are all RRF values ≥0.05 (2/88 SOW)? Yes No (N/A)

Are all applicable RSD values ≤20.5% (3/90 SOW)?	(Yes)	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	(Yes)	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	(Yes)	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	(Yes)	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	(Yes)	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	15 (Yes)	No	(N/A)
Are all %D values ≤25% (2/88 or 3/90 SOW)?	Yes	(No) Two compounds allowed.	N/A
Are all %D values ≤40% (3/90 SOW)?	(Yes)	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	(Yes)	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	(Yes)	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	(Yes)	No	N/A
Are TCL compounds present in the laboratory blanks?	(Yes)	No	N/A

ACTION: Qualify all sample results ≤10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results ≤5 times the blank concentration in similar fashion.

(9)

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No (N/A) None submitted

ACTION: Qualify all detected sample results ≤5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification?	Yes	(No)	N/A
Are any surrogate recoveries < 10%?	Yes	(No)	N/A
Are any method blank surrogate recoveries out of specification?	Yes	(No)	N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but > 10%. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group?	(Yes)	No	N/A
Are MS/MSD recoveries within specification?	(Yes)	No	N/A
Are there any calculation errors?	Yes	No	(N/A) Level 2

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is >5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

(9)

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

Are there any calculation errors? Yes No (N/A)
Level 2

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? (Yes) No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? (Yes) No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes (No) N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

(9)

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	(Yes)	No	N/A
Are all ions at a relative intensity of ≥ 10% in the standard spectra present in the sample spectra?	(Yes)	No	N/A
Do the relative intensities between the standard and sample spectra agree within 20%?	(Yes)	No	N/A
Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	(Yes)	No	N/A
Are molecular ions present in the reference specrum present in the sample spectrum?	(Yes)	No	N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation?	(Yes)	No	N/A
Are results and quantitation limits calculated properly?	(Yes)	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	(Yes)	No	N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	(Yes)	No	N/A
Has the laboratory properly identified and coded all TIC?	Yes	No	(N/A)

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	(Yes)	No	N/A
Were project specific data quality objectives met for this analysis?	(Yes)	No	N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

(9)

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

SDG: 92121-005	REVIEWER: AS		DATE: 4/13/93			PAGE 1 OF 1	
COMMENTS: Volatiles						Level 2 Validation	
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q13	VOA	12/7/92	—	12/17/93	—	10	—

√ Cmm 4/14/93

9

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1		
COMMENTS: Volatiles		1990 SOW	Level 2 Validation		
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT: 5100 R → DB624 Column			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
ICAL 12/16/92	~~4 erratic compounds had~~				
	high %RSD. No qualifiers	req'd.	these are not high. all are acceptable.	ok	
	~~Chloroethane - 22.8%~~			—	—
	~~Acetone - 28.2%~~			—	—
	~~2-butanone - 26.0%~~			—	—
	~~2-hexanone - 22.3%~~	ok		—	—
	All RRF acceptable.				
12/17/92	Bromomethane - 28.7%		ok std.	~~No qualifiers req'd.~~ ~~No qualifiers req'd.~~ ok	
	Chloromethane - 26.3%			2 compounds allowed	— ✓
Tunes 12/16/92 → ICAL			all tuning	criteria	none
12/17/92 → CCAL, VBLK, BOTQ13, MS/MSD			met. ok		↓

✓ ok 4/14/93

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 72121 | REVIEWER: MS | DATE: 4/13/93 | PAGE 1 OF 1

COMMENTS: Volatile Organics — Level 2 Validation

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK	Acetone	2	J		µg/kg		20	B07Q13	U at CRQL
	There was a methylene chloride peak, but no spectra	1			µg/kg				no qualifier was assigned, but methylene chloride was prob. not really in the sample.

WHC-SD-EN-SPP-002, Rev. 1

B-3

✓ MR 4/14/93

9

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
All surrogate recoveries within limits.		86-107% ✓		none
All MS/MSD recoveries within limits (using sample B07Q13)		71-100 % ✓		none
IS - Chlorobenzene-d5 slightly low for sample B07Q13			B07Q13	UJ(-)
All RT = acceptable				
	2-hexanone ✓	dibromochloromethane		UJ
	4-methyl-2-pentanone ✓	bromoform		
	tetrachloroethene ✓			
	1,1,2,2-tetrachloroethane ✓			
	toluene ✓			
	chlorobenzene ✓			
	ethylbenzene ✓			
	Styrene ✓			
	Xylene ✓			
	trans + CIS -1,3-dichloropropene			
	1,1,2-trichloroethane			

/ me 4/14/93

PRECISION DATA SUMMARY - FORM B-5

SDG: 9212L005 | REVIEWER: HS | DATE: 4/13/93 | PAGE 1 OF 1

COMMENTS: Volatiles | Level 2 Validation

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
MS/MSD: All RPD values = 1-8 % ✓	—	—	—	—	—
Field Dup → none in this package					none
Field Split → B07Q13 is a field split of B07Q12 in package 12-049 (TMA). A presentation of split precision is given in the attachments to 12-049, and are acceptable. HS					none

(9)

CALCULATION SUMMARY - FORM B-6

SDG: 92121005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1

COMMENTS:

B07Q13

Acetone = $\frac{3993(50)}{67490(1.219)(.98)} = 2.42$ U = 2.46 U

Methylene Chloride = $\frac{17671(50)}{67490(2.35)(.98)} = 5.68$ U

HCRL-WHC/9316-T-93-015

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case #92121005 (Semi-Vol. Org.

Document Number: HCRL-WHC/9316-L-93-014 Date: 4/20/93

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Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports X
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser Inc.
1201 Jadwin Avenue, Suite 204
Richland, Washington 99352
FAX 509.946.4215
509.946.4344

J-2978-56

April 20, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
Roy F. Weston Case Number 9212L005 - Semivolatile Organics

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of one low level soil sample submitted for analysis for semivolatile organics. The sample results were fully validated. In addition, all of the supporting quality control summaries were reviewed.

The samples were analyzed by Roy F. Weston using the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including GC/MS tuning, surrogates, matrix spike/matrix spike duplicates, continuing calibrations, compound identifications, and internal standards), and quantitation limit requirements were met for this case with the exception of the following: tentatively identified compounds (TICs) were detected in the method blank and associated samples, the matrix spike percent recoveries were high for several compounds, and two compounds were detected below the contract required quantitation limit (CRQL).

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following general trends resulted in the qualification of the sample data. All qualified data are discussed in Attachments 3 and 5.

Several matrix spike compound percent recoveries were just above the control limits for both the matrix spike sample and the matrix spike duplicate sample. No qualifiers were assigned as there were no target compounds detected in the sample. The ability to achieve the target compound required detection limits was not affected.

Low level TICs, including aldol condensation products, were detected in the method blank. Several aldol condensation products, and one other TIC were also detected in the sample. Sample TIC concentrations which were less than 5 times the blank concentration were qualified as undetected at estimated concentrations based on presumptive evidence (UJN). In the case of aldol condensation products, the sum of the products was used to determine the qualification, rather than the concentration of individual compounds.

The remaining TIC compounds which were not qualified as undetected were qualified as estimated concentrations based on presumptive evidence (JN).

Trace concentrations of di-n-butyl phthalate and bis(2-ethylhexyl)phthalate were detected in the sample. As the concentrations were near the instrument detection limit, but below the CRQL, the concentrations were qualified as estimates (J).

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#134.RL1754.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-014

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

ATTACHMENT 1

Glossary of Data Qualifiers

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates the presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

0700028 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BO7Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M011106

Level: (low/med) LOW

Data Received: 12/12/92

% Moisture: 2 decanted: (Y/N)

Data Extracted: 12/18/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 01/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	840	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	340	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

0 0 0 0 3 0 CLIENT SAMPLE NO.

BO7Q13

Lab Name: Rov F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: M011106

Level: (low/med) LOW Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N) Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL) Date Analyzed: 01/11/93

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
51-28-5	2,4-Dinitrophenol	840	U
100-02-7	4-Nitrophenol	840	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-butylphthalate	100	J
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	36	J
117-84-0	Di-n-octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenz(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

1F

0 7 0 0 0 3 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: M011106

Level: (low/med) LOW Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N) Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL) Date Analyzed: 01/11/93

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

Number TICs found: 12 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		ALDOL CONDNEESATE	6.52	500	JAB
2.		UNKNOWN	6.77	200	J
3.		ALDOL CONDENSATE	7.00	2000	JAB
4.		ALDOL CONDENSATE	7.80	1000	JA
5.		ALDOL CONDENSATE	8.13	900	JA
6.		UNKNOWN	8.62	80	J
7.		ALDOL CONDENSATE	8.68	200	JA
8.		ALDOL CONDENSATE	8.83	300	JA
9.		PHTHALATE	19.82	300	JB
10.		UNKNOWN	26.85	200	J
11.		UNKNOWN	27.93	100	J
12.		UNKNOWN	30.60	80	J

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9317L005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS: Semivolatiles			Level 2 Validation
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Aldol condensate	UJN ✓	B07Q13	TIC vs blank
unknown	JN ✓		
aldol condensate	UJN ✓		
aldol condensate	JA/AK UJN		
aldol condensate	UJN		
unknown	JN		
aldol condensat	UJN		
aldol condensate	UJN		
phthalate	UJN		
unknown	JN		
unknown	↓		
unknown	↓	↓	↓
di-n-butyl phthalate	J	B07Q13	below CRQL
bis (2-Ethylhexyl) phthalate	J	B07Q13	below CRQL

ATTACHMENT 4

As Qualified Data Summary

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

0 0 0 0 2 8 CLIENT SAMPLE NO.

BO7Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: M011106

Level: (low/med) LOW Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N) Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL) Date Analyzed: 01/11/93

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	Qual
108-95-2	Phenol	340	U	U
111-44-4	bis(2-Chloroethyl)ether	340	U	
95-57-8	2-Chlorophenol	340	U	
541-73-1	1,3-Dichlorobenzene	340	U	
106-46-7	1,4-Dichlorobenzene	340	U	
95-50-1	1,2-Dichlorobenzene	340	U	
95-48-7	2-Methylphenol	340	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U	
106-44-5	4-Methylphenol	340	U	
621-64-7	N-Nitroso-di-n-propylamine	340	U	
67-72-1	Hexachloroethane	340	U	
98-95-3	Nitrobenzene	340	U	
78-59-1	Isophorone	340	U	
88-75-5	2-Nitrophenol	340	U	
105-67-9	2,4-Dimethylphenol	340	U	
111-91-1	bis(2-Chloroethoxy)methane	340	U	
120-83-2	2,4-Dichlorophenol	340	U	
120-82-1	1,2,4-Trichlorobenzene	340	U	
91-20-3	Naphthalene	340	U	
106-47-8	4-Chloroaniline	340	U	
87-68-3	Hexachlorobutadiene	340	U	
59-50-7	4-Chloro-3-methylphenol	340	U	
91-57-6	2-Methylnaphthalene	340	U	
77-47-4	Hexachlorocyclopentadiene	340	U	
88-06-2	2,4,6-Trichlorophenol	340	U	
95-95-4	2,4,5-Trichlorophenol	840	U	
91-58-7	2-Chloronaphthalene	340	U	
88-74-4	2-Nitroaniline	840	U	
131-11-3	Dimethylphthalate	340	U	
208-96-8	Acenaphthylene	340	U	
606-20-2	2,6-Dinitrotoluene	340	U	
99-09-2	3-Nitroaniline	840	U	
83-32-9	Acenaphthene	340	U	

MS 4/13/93

✓ CWR 4/14/93

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

0 0 0 3 0 3 0 CLIENT SAMPLE NO.

BO7Q13

Lab Name: Rov F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: M011106

Level: (low/med) LOW Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N) Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL) Date Analyzed: 01/11/93

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	
51-28-5	2,4-Dinitrophenol	840	U	U
100-02-7	4-Nitrophenol	840	U	
132-64-9	Dibenzofuran	340	U	
121-14-2	2,4-Dinitrotoluene	340	U	
84-66-2	Diethylphthalate	340	U	
7005-72-3	4-Chlorophenyl-phenylether	340	U	
86-73-7	Fluorene	340	U	
100-01-6	4-Nitroaniline	840	U	
534-52-1	4,6-Dinitro-2-methylphenol	840	U	
86-30-6	N-Nitrosodiphenylamine (1)	340	U	
101-55-3	4-Bromophenyl-phenylether	340	U	
118-74-1	Hexachlorobenzene	340	U	
87-86-5	Pentachlorophenol	840	U	
85-01-8	Phenanthrene	340	U	
120-12-7	Anthracene	340	U	
86-74-8	Carbazole	340	U	
84-74-2	Di-n-butylphthalate	100	J	J
206-44-0	Fluoranthene	340	U	U
129-00-0	Pyrene	340	U	
85-68-7	Butylbenzylphthalate	340	U	
91-94-1	3,3'-Dichlorobenzidine	340	U	
56-55-3	Benzo(a)anthracene	340	U	
218-01-9	Chrysene	340	U	
117-81-7	bis(2-Ethylhexyl)phthalate	36	J	J
117-84-0	Di-n-octyl phthalate	340	U	U
205-99-2	Benzo(b)fluoranthene	340	U	
207-08-9	Benzo(k)fluoranthene	340	U	
50-32-8	Benzo(a)pyrene	340	U	
193-39-5	Indeno(1,2,3-cd)pyrene	340	U	
53-70-3	Dibenz(a,h)anthracene	340	U	
191-24-2	Benzo(g,h,i)perylene	340	U	

(1) - Cannot be separated from Diphenylamine

✓ awr 4/14/93

1F 0 7 0 0 0 3 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q13

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: M011106

Level: (low/med) LOW Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N) Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL) Date Analyzed: 01/11/93

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

Number TICs found: 12 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDNEESATE	6.52	500	JAB
2.	UNKNOWN	6.77	200	J
3.	ALDOL CONDENSATE	7.00	2000	JAB
4.	ALDOL CONDENSATE	7.80	1000	JA
5.	ALDOL CONDENSATE	8.13	900	JA
6.	UNKNOWN	8.62	80	J
7.	ALDOL CONDENSATE	8.68	200	JA
8.	ALDOL CONDENSATE	8.83	300	JA
9.	PHTHALATE	19.82	300	JB
10.	UNKNOWN	26.85	200	J
11.	UNKNOWN	27.93	100	J
12.	UNKNOWN	30.60	80	J

Qual.
UJN
JN
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UJN
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JN
UJN
and
UJN
JN

AS 4/14/93

✓ Unr 4/14/93

ATTACHMENT 5

Data Review Supporting Documentation

(10)

SEMI-VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-2

PROJECT: White Bluffs Pickling Acid Cribs ERA	REVIEWER: ANK	DATE: 4/2/92
LABORATORY: Weston	CASE: 92121005	SDG:
SAMPLES/MATRIX:		
soil B07Q13		
		Level 2
		Validation

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓	—	—
Data Summary	✓	—	—
Chain-of-Custody	✓	—	—
QC Summary			
Surrogate report	✓	—	—
MS/MSD report	✓	—	—
Blank summary report	✓	—	—
GC/MS tuning report	✓	—	—
Internal standard summary report	✓	—	—
Sample Data			
Sample reports	✓	—	—
TIC reports for each sample	✓	—	—
RIC reports for all samples	✓	—	—
Raw and corrected spectra for all detected results	✓	—	—
Raw and corrected library search data for all reported TIC	✓	—	—
Quantitation and calculation data for all TIC	✓	—	—
Standards Data			
Initial calibration report	✓	—	—
RIC and quantitation reports for initial calibration	✓	—	—
Continuing calibration reports	✓	—	—
RIC and quantitation reports for cont. calibrations	✓	—	—
Internal standard summary report	✓	—	—
Raw QC Data			
Tuning report, spectra and mass lists	✓	—	—
Blank analysis reports	✓	—	—
TIC reports for all blanks	✓	—	—
RIC and quantitation reports for blanks	✓	—	—
Raw and corrected spectra for all detected results in blanks	✓	—	—
Raw and corrected library search data for all reported TIC	✓	—	—
Quantitation and calculation data for all TIC	✓	—	—
MS/MSD report forms	✓	—	—

Data Package Item	Present?:	Yes	No	N/A
RIC and quantitation reports for MS/MSD		✓		
Additional Data				
Moisture/% solids data sheets	(in other pkg)			✓
Reduction formulae				✓
Instrument time logs				✓
Chemist notebook pages				✓
Sample preparation sheets		✓		

2. HOLDING TIMES

Were all samples extracted within holding time?	(Yes)	No	N/A
Were all samples analyzed within holding time?	(Yes)	No	N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a DFTPP tune report present for each applicable 12h period?	(Yes)	No	N/A
Do all tunes on all instruments meet the tuning criteria?	(Yes)	No	N/A
Do all tunes on all instruments meet the expanded criteria?	(Yes)	No	N/A
Has the laboratory made any calculation or transciption errors?	Yes	No	(N/A) level 2
Have the proper significant figures been reported?	(Yes)	No	N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects and UJ for nondetects). If all tuning criteria are not met, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments?	(Yes)	No	N/A
Are all RSD values ≤30% (2/88 SOW)?	Yes	No	(N/A)
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No	(N/A)
Are all applicable RSD values ≤20.5% (3/90 SOW)?	(Yes)	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	(Yes)	No	N/A

Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	Yes	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No	N/A
Are all %D values ≤25% (2/88 or 3/90 SOW)?	Yes	No	N/A
Are all %D values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every extraction batch?	Yes	No	N/A
Are compounds reported in the laboratory blanks?	Yes	No	N/A

TIC compounds detected

ACTION: Qualify all sample results < 10 times the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is < CRQL. Qualify all remaining sample results < 5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are compounds reported in the field blanks? Yes ~~No~~ N/A

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the results of the field blanks in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes ~~No~~ N/A

Are any surrogate recoveries < 10%? Yes ~~No~~ N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated data as estimated (J for detects and UJ for nondetects) if at least two semivolatile surrogates are out of specification. If any surrogate is below 10% recovery qualify associated detected results as estimated (J) and associated nondetect results as unusable (R). If method blank surrogates are out of specification and associated sample surrogates are acceptable no qualification is required, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? ~~Yes~~ No N/A

Are MS/MSD recoveries within specification? Yes ~~No~~ N/A

Are there any calculation errors? Yes No ~~N/A~~

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

(10)

5.3 PERFORMANCE AUDIT SAMPLES

Are the results for the performance audit samples within the acceptance limits? Yes No ~~N/A~~

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are all RPD values within specification? ~~Yes~~ No N/A

Are there any calculation errors? Yes No (N/A) Level 2

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No ~~N/A~~

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? ~~Yes~~ No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes ~~No~~ N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes ~~No~~ N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects and UJ for nondetects. If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	Yes	No	N/A
Are all ions at a relative intensity of ≥ 10% in the standard spectra present in the sample spectra?	Yes	No	N/A
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	N/A
Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	Yes	No	N/A
Are molecular ions in the reference spectrum present in the sample spectrum?	Yes	No	N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R).

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standards for quantitation?	Yes	No	N/A
Are results and quantitation limits calculated properly?	Yes	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	Yes	No	N/A

ACTION: If the quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	Yes	No	N/A
Has the laboratory properly identified and coded all TIC?	Yes	No	N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	(Yes)	No	N/A
Were project specific data quality objectives met for this analysis?	(Yes)	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

SDG: 9212L005	REVIEWER: KS			DATE: 4/13/93		PAGE 1 OF 1	
COMMENTS:	Semivolatiles					Level 2 validation	
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q13	BNA	12/7/92	12/18/93	1/11/93	11	25	—
—							

✓ ans 4/14/93

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93		PAGE 1 OF 1	
COMMENTS: Semivolatiles		1990 SOW		Level 2 Validation	
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT: 5100 M			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
All GC/MS (1/8/93 + 1/11/93 + 1/13/93)	tuning acceptable				
1/8/93 ICAL	All %RSD & RRF acceptable		—	—	—
1/11/93 CCAL	All %D & RRF acceptable		—	—	—
1/13/93 CCAL	" "		—	—	—

✓ am 4/14/93

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WHC-SD-EN-SPP-002, Rev. 1

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BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 9212005	REVIEWER: AS			DATE: 4/13/93				PAGE 1 OF 1	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK	Aldol condensate	300		6.5		all aldol condensation products were (UJN) regardless of R.T.		B07Q13	UJN
(92LE2117-mb)	Aldol condensate	50		6.97				B07Q13	U
	Unknown	80		10.08				—	—
	Siloxane	70		10.60				—	—
	phthalate	70		11.83				B07Q13	UJN
—									
	No TCL compounds detected								
The case narrative says that this method blank was contaminated with Di-n-butyl phthalate. A reserve, non-GPC'd portion of the extract was analyzed and reported. This initial data was not included in the data package. Di-n-butyl phthalate was reported in the sample. Should be qual'd "U" but can't be because we don't have the data.									
								CWC 4/14/93	

B-3

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ACCURACY DATA SUMMARY - FORM B-4

SDG: 92120005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF ___	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
All surrogate % recoveries within limits		37-108 %	—	—
			89 are	
All Blank spike recoveries within limits		— 65-87%	—	—
	(QA limit)			
B07Q13 MS	Phenol (26-90)	107 %	No qual req'd. since	
	2-chlorophenol (25-102)	114 %	non-compounds were detected	
	1,2,4-trichlorobenzene (38-107)	110 %	All surrogate/blank spike	
	4-nitrophenol (11-114%)	125 %	were acceptable. Also, these	
	2,4-dinitrotoluene (28-89%)	123 %	%R are high, and	
			sample is nondetect,	
B07Q13 MSD	Phenol (26-90)	103 %	so no qual.	
	2-chlorophenol (25-102)	106 %		
	4-nitrophenol (11-114%)	118 %		
	2,4-dinitrotoluene (28-89%)	121 %		
All I.S. & RT's acceptable		—	—	—

PRECISION DATA SUMMARY - FORM B-5

SDG: 9712L005	REVIEWER AS	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS: Semivolatiles			Level 2 validation

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
MS/MSD: All % RPD acceptable	0-7 %	—	—	—	—
Field Dup → none in this data package					none
Field Split	B07Q13	B07Q12			
bis (2-Ethylhexyl) phthalate	36 (J)	330 (U)	±CRQL		none
TIC unknown (6.77)	200 (JN)	170 (UJN)	NA	these are rough matches and cannot be confirmed, for TICs' use	
TIC unknown (8.62)	80 (JN)	270 (UJN)			
TIC unknown (26.85)	200 (JN)	NA			
TIC unknown (27.93)	100 (JN)	67 (JN)			
TIC unknown (30.60)	80 (JN)	130 (JN)			
di-n-butyl phthalate	100 (J)	330 (U)	±CRQL		none

CALCULATION SUMMARY - FORM B-6

SDG: 9212L005 | REVIEWER: AS | DATE: 4/13/43 | PAGE 1 OF 1

COMMENTS: / Semivolatile | Level 2 validation

B07Q13 = ✓ Di-n-butylphthalate = $\frac{15918(40)(2)(500)}{72493(2)(1.240)(30.3)(.98)}$

$\frac{6367200}{5936779} = 107.25$ ✓

✓ Bis(2-ethylhexyl)phthalate = $\frac{3783(40)(2)(500)}{74790(2)(.867)(30.3)(.98)}$

$\frac{151320000}{3850891} = 39.29$ ✓

TIC Unknown = $\frac{43214}{173784} \times \frac{40}{(6.77)} = \frac{10\ (500)}{(30.3)(0.98)} = 170$ ✓

TIC Unknown = $\frac{22672}{173784} \times \frac{40}{(8.62)} = \frac{5\ (500)}{(30.3)(0.98)} = 84$ ✓

TIC Unknown = $\frac{61778}{183776} \times \frac{40}{(26.85)} = \frac{13\ (500)}{(30.3)(0.98)} = 219$ ✓

TIC Unknown = $\frac{33286}{183776} \times \frac{40}{(27.93)} = \frac{7\ (500)}{30.3\ (0.98)} = 118$ ✓

TIC Unknown = $\frac{21648}{183766} \times \frac{40}{(30.60)} = \frac{5\ (500)}{30.3\ (0.98)} = 84$ ✓

Reported TIC results are rounded to 1 sig. fig.

HCRL-WHC/9316-T-93-025

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case #9212L005 (Anions NO_2 NO_3)

Document Number: HCRL-WHC/9316-L-93-024 Date: 4/20/93

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Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index	2.1	Incoming Correspondence	4.1	Task Plan
1.2	Distribution Lists	2.2	Outgoing Correspondence X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures	2.3	Internal Correspondence	4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications			4.4	Prelim. QA Reports X
1.5	Staff	3.1	Task Order	4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes	3.2	Sample Lists	4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training	3.3	Data Validation Procedures	4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee	3.4	Original Chemical Data	4.5.3	Final Report
1.6	QA	3.5	Original Radiochem. Data	4.6	Weekly Status Reports
1.6.1	QA Implement Procedures			4.7	Weekly Management Reports
1.6.2	QA Audits				
1.6.3	QA Training				
1.7	Budget				
1.7.1	Budget Status				
1.7.2	Invoices				
1.8	Requisitions				
1.9	Meeting Minutes				
1.10	Record of Telecon				
1.11	Progress Reports				
1.12	Subcontractor				

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser Inc.
1201 Jadwin Avenue, Suite 204
Richland, Washington 99352
FAX 509 946 4203
509 946 4326

J-2978-56

April 20, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
Weston Case Number 9212L005 - Anions and Nitrate/Nitrite

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of one low level soil sample submitted for analysis for anions (chloride, fluoride, phosphate, and sulfate), and nitrate/nitrite. The sample was fully validated. In addition, a 100 percent validation of the supporting quality control data was performed.

The samples were analyzed by Weston using the U.S. Environmental Protection Agency (EPA) Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Methods 300.0 and 353.1, modified for soil (leachate) analysis. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including holding times, instrument and method blanks, matrix spikes, duplicates, laboratory control samples, and initial and continuing calibrations), and quantitation limit requirements were met for this case with the exception of the following: the nitrate/nitrite holding time was exceeded; and interlaboratory precision goals were not met for chloride, fluoride, and phosphate.

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following deficiencies resulted in the qualification of the data.

The sample was analyzed for nitrate/nitrite 9 days past the 28 day holding time. Therefore, the nitrate/nitrite concentration was qualified as an estimate (J).

Sample B07Q13 was a split of sample B07Q12, which was analyzed by TMA. The interlaboratory precision was acceptable for nitrate/nitrite and sulfate, but was unacceptable for chloride, fluoride, and phosphate, based on the computed relative percent deviation (RPD) between concentrations. No qualifiers were assigned at this time. Insufficient data are available to assign qualifiers to the complete data set.

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#134:RL1764.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-024

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

ATTACHMENT 1

Glossary of Data Qualifiers

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates the presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/15/93

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9212L005

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B07Q13	% Solids	98.1	%	0.10
		Chloride by IC	27.0	MG/KG	1.3
		Fluoride by IC	3.2	MG/KG	2.5
		Phosphate by IC	4.4	MG/KG	1.3
		Sulfate by IC	23.2	MG/KG	1.3
		Hardness	50.9	MG/KG	17.0
		Nitrate Nitrite	2.7	MG-N/KG	0.51
		Ammonia, as N	6.9	MG/KG	1.3
		pH	6.7	PH UNITS	0.010

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9212L005	REVIEWER: Clw	DATE: 4/7/93	PAGE 1 OF 1
COMMENTS: anions, nitrate/nitrite			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
nitrate/nitrite	J	B07Q13	missed HT

ATTACHMENT 4

As Qualified Data Summary

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/15/93

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9212L005

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	Qual
-001	BO7Q13	% Solids	98.1	%	0.10	notvq
		Chloride by IC	27.0	MG/KG	1.3	—
		Fluoride by IC	3.2	MG/KG	2.5	—
		Phosphate by IC	4.4	MG/KG	1.3	—
		Sulfate by IC	23.2	MG/KG	1.3	—
		Hardness	50.9	MG/KG	17.0	notvq
		Nitrate Nitrite	2.7	MG-N/KG	0.51	(J)
		Ammonia, as N	6.9	MG/KG	1.3	notvq
		pH	6.7	PH UNITS	0.010	notvq

✓ mc 4/7/93

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: White Bluffs Pickling, Acid Cross	REVIEWER: CHR	DATE: 4/2/93
LABORATORY:	CASE: 92/2L005	SDG:
SAMPLES/MATRIX:		
Soil B07Q13		
		Level 4 Validation

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓	—	—
Cover Page		✓	—	—
Traffic Reports/Chain-of-Custody		✓	—	—
Sample Analysis Data Report Forms		✓	—	—
Standards Data		~~✓~~	✓	—
QC Summary				
Blanks Summary Report Forms		✓	—	—
Spike Sample Recovery Report Forms		✓	—	—
Duplicate Sample Analysis Report Forms		✓	—	—
Laboratory Control Sample Report Forms		✓	—	—
Raw Data				
Ion Chromatograph Chromatograms		✓	—	—
TOC and TOX Instrument Printouts		—	—	✓
Laboratory Bench Sheets		—	—	✓
Additional Data				
Laboratory Sample Preparation Logs		✓	—	—
Instrument Run Logs		✓	—	—
Internal Laboratory Chain-of-Custory		✓	—	—
Percent Solids Analysis Records		✓	—	—
Reduction Formulae		—	—	✓
Chemist Notebook Pages		—	—	✓

2. HOLDING TIMES

Were all samples analyzed within holding times? Yes (No) N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?	(Yes)	No	N/A
Are the correlation coefficients ≥0.995?	(Yes)	No	N/A
Was a balance check conducted prior to the TDS analysis?	Yes	No	(N/A)
Was the titrant normality checked?	Yes	No	(N/A)

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency?	(Yes)	No	N/A
Are ICV and CCV percent recoveries within control?	(Yes)	No	N/A
Are there calculation errors?	Yes	(No)	N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?	Yes	(No)	N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks?	Yes	No	(N/A)

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits?	(Yes)	No	N/A

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are >CRQL, qualify the data as estimated (J). If the spike recovery is <30% and the sample results are less then the IDL qualify the data as unusable (R).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R < 50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? (Yes) No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? (Yes) No N/A

ACTION: Note the results of the field split samples in the validation narrative.

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	(Yes)	No	N/A
Are instrument detection limits below the CRDL?	(Yes)	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	(Yes)	No	N/A
Were project specific data quality objectives met for this analysis?	(Yes)	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

ATTACHMENT 5

Data Review Supporting Documentation

HOLDING TIME SUMMARY - FORM B-1

92/2L005

SDG:	REVIEWER: Dave Russell	DATE: 4/7/93	PAGE 1 OF 1

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q13	anions	12/7/93	12/19/92	12/19/92	12	0	none
↓	nitrate/nitrite ↓	↓	1/13/93	1/13/93	37	0	J

CALIBRATION DATA SUMMARY - FORM B-2

92/2L005

SDG:	REVIEWER: Clare Russell	DATE: 4/7/93		PAGE 1 OF 1	
COMMENTS:					
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
ICAL →	all acceptable				none
CCAL →	all acceptable				none

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

9212L005

SDG:	REVIEWER: Dave Russell	DATE: 4/7/93	PAGE 1 OF 1
COMMENTS:			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
All blanks were <DL									None

ACCURACY DATA SUMMARY - FORM B-4

9212L005

SDG:	REVIEWER: Clare Russell	DATE: 4/7/93	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
matrix spike (B07Q135)	→ all acceptable		B07Q13	none
blank spike	→ all acceptable		B07Q13	none

PRECISION DATA SUMMARY - FORM B-5

92L005

SDG:	REVIEWER Clare Russell	DATE: 4/7/93	PAGE 1 OF 1

COMMENTS:

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
lab dup → all acceptable (B07Q13)					none
field dup → none in this package.					
	B07Q12	B07Q13			
field split chloride	27	11.5 J	80.5% RPD		
fluoride	3.2	1.4 J	78.3% RPD		
phosphate	4.4	1.0 J (<5x PQL)	126% RPD		
sulfate	23.2	23 J	0.9% RPD ✓		
nitrate/nitrite	2.7 (J)	3.52	26.4% RPD ✓		

HCRL-WHC/9316-T-93-019

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case #92/2L005(Metals)

Document Number: HCRL-WHC/9316-L-93-018 Date: 4/20/93

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Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser
1201 Jadwin Avenue Suite
Richland, Washington 99352
FAX 509 946
509.946.

J-2978-56

April 20, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
Weston Case Number 9212L005 - Metals

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of one low level soil sample submitted for analysis for metals. The sample was fully validated. In addition, a 100 percent validation of the supporting quality control data was performed.

The sample was analyzed by Weston using the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including holding times, instrument and method blanks, matrix spikes, duplicates, laboratory control samples, initial and continuing calibrations, and instrument-specific quality control measures), and quantitation limit requirements were met for this case with the exception of the following: the mercury matrix spike percent recovery was above the upper control limit; the selenium analytical spike percent recovery was below the lower control limit; there was minor nickel and potassium blank contamination; and sodium blanks had negative values greater than the instrument detection limit (IDL).

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following resulted in the qualification of data. All qualified data are discussed in Attachments 3 and 5.

The mercury matrix spike percent recovery was above the upper control limit. As mercury was not detected in the sample, no data were qualified.

The selenium analytical spike percent recovery was outside the 85 to 115 percent control limits. Selenium was not detected in the sample. The associated quantification limit was qualified as an estimate (UJ).

There was minor nickel and potassium blank contamination which resulted in the qualification of data. All associated nickel and potassium concentrations which were less than 5 times the blank concentration were qualified as undetected (U).

Sodium blanks had negative values which were greater than the IDL. The associated sodium concentration, which was within 5 times the magnitude of the blank, was qualified as an estimate (J).

Split sample precision was acceptable for all metals except chromium (128 percent RPD). However, no qualifiers were assigned at this time as all other data quality objectives were met.

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#134:RL1758.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-018

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

ATTACHMENT 1

Glossary of Data Qualifiers

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates the presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO7Q13

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP005

Matrix (soil/water): SOIL Lab Sample ID: 921200501

Level (low/med): LOW Date Received: 12/12/92

% Solids: 98.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5370.00			P
7440-36-0	Antimony	12.20	U		P
7440-38-2	Arsenic	2.40			F
7440-39-3	Barium	52.30			P
7440-41-7	Beryllium	.29	B		P
7440-43-9	Cadmium	1.43	U		P
7440-70-2	Calcium	3250.00			P
7440-47-3	Chromium	9.50			P
7440-48-4	Cobalt	8.40	B		P
7440-50-8	Copper	13.20			P
7439-89-6	Iron	14600.00			P
7439-92-1	Lead	3.60		*	F
7439-95-4	Magnesium	3670.00			P
7439-96-5	Manganese	143.00			P
7439-97-6	Mercury	.05	U	N	CV
7440-02-0	Nickel	13.60			P
7440-09-7	Potassium	1410.00			P
7782-49-2	Selenium	.41	U	W	F
7440-22-4	Silver	2.04	U		P
7440-23-5	Sodium	165.00	B		P
7440-28-0	Thallium	.41	U		F
7440-62-2	Vanadium	36.00			P
7440-66-6	Zinc	40.40			P
	Cyanide				NR
	Zirconium	40.8	U		

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

92124005

SDG:	REVIEWER: Chuck	DATE: 4/11/93	PAGE 1 OF 1
COMMENTS: Metals			Level 4 Valid
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
nickel	U	B07Q13	blank contam
potassium	U	↓	↓
Selenium	UJ		anal spike <85%
sodium	J	↓	neg blank

ATTACHMENT 4

As Qualified Data Summary

0000022

U.S. EPA - CLP

EPA SAMPLE NO.

1
INORGANIC ANALYSIS DATA SHEET

BO7Q13

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP005

Matrix (soil/water): SOIL Lab Sample ID: 921200501

Level (low/med): LOW Date Received: 12/12/92

% Solids: 98.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	5370.00			P	
7440-36-0	Antimony	12.20	U		P	U
7440-38-2	Arsenic	2.40			F	
7440-39-3	Barium	52.30			P	
7440-41-7	Beryllium	.29	B		P	
7440-43-9	Cadmium	1.43	U		P	U
7440-70-2	Calcium	3250.00			P	
7440-47-3	Chromium	9.50			P	
7440-48-4	Cobalt	8.40	B		P	
7440-50-8	Copper	13.20			P	
7439-89-6	Iron	14600.00			P	
7439-92-1	Lead	3.60		*	F	
7439-95-4	Magnesium	3670.00			P	
7439-96-5	Manganese	143.00			P	
7439-97-6	Mercury	.05	U	N	CV	U
7440-02-0	Nickel	13.60			P	U
7440-09-7	Potassium	1410.00			P	U
7782-49-2	Selenium	.41	U	W	F	UJ
7440-22-4	Silver	2.04	U		P	U
7440-23-5	Sodium	165.00	B		P	J
7440-28-0	Thallium	.41	U		F	U
7440-62-2	Vanadium	36.00			P	
7440-66-6	Zinc	40.40			P	
	Cyanide				NR	
	Zirconium	40.8	U			U

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ CMR 4/11/93

ATTACHMENT 5

Data Review Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: White Bluffs Aerial Crabs ERA	REVIEWER: CMK	DATE: 4/2/93
LABORATORY: Weston	CASE: 92121005	SDG:
SAMPLES/MATRIX:		
Soil B07Q13		

Level 4 Validation

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Cover Page	✓		
Traffic Reports	✓		
Sample Data			
Inorganic Analysis Data Sheets	✓		
Standards Data			
Initial and Continuing Calibration Verification	✓		
CRDL Standard for AA and ICP	✓		
QC Summary			
Blanks	✓		
ICP Interference Check Summary	✓		
Spike Sample Recovery	✓		
Post-Digestion Spike Sample Recovery	✓		
Duplicate	✓		
Laboratory Control Sample	✓		
Standard Addition Results	✓		
ICP Serial Dilutions	✓		
Instrument Detection Limits	✓		
ICP Interelement Correction Factors	✓		
ICP Linear Ranges	✓		
Preparation Log	✓		
Analysis Run Log	✓		
Raw Data			
ICP Raw Data	✓		
Furnace AA Raw Data	✓		
Mercury Raw Data	✓		
Cyanide Raw Data	✓		
Additional Data			
Internal laboratory chain-of-custody	✓		
Laboratory Sample Preparation Records	✓		

Data Package Item	Present?:	Yes	No	N/A
Percent Solids Analysis Records	present in other data	—	✓	—
Reduction Formulae		✓	—	✓
Instrument Run Logs		✓	—	✓
Chemist Notebook Pages		—	—	✓

2. HOLDING TIMES

Have all samples been analyzed within holding times? (Yes) No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥ 0.995? (Yes) No N/A

Was a midrange cyanide standard distilled? Yes No (N/A)

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? (Yes) No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No (N/A)

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes (No) N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? (Yes) No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? (Yes) No N/A

Is there evidence of negative interference? Yes (No) N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? (Yes) No N/A

ACTION: Note the results of the field split samples in the validation narrative.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? (Yes) No N/A

Are applicable duplicate injection RSD values within control? (Yes) No N/A

If no, were samples rerun once as required? Yes No (N/A)

Does the RSD for the rerun fall within the control limits? Yes No (N/A)

Were analytical spike recoveries within the control limits? Yes (No) N/A

If no, were MSA analyses performed when required?	Yes	No	(N/A)
Are MSA correlation coefficients $\geq$0.995?	Yes	No	(N/A)
If no, was a second MSA analysis performed?	Yes	No	(N/A)

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is <40% qualify detects as estimated (J). If the analytical spike recovery is $\geq$10% but <40%, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is <10%, reject all nondetects (R). If the sample absorbance is <50% of the analytical spike absorbance and the analytical spike recovery is <85% or >115%, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	(Yes)	No	N/A
Are results within the calibrated range of the instruments and within the linear range of the ICP?	(Yes)	No	N/A
Are all detection limits below the CRQL?	(Yes)	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	(Yes)	No	N/A
Were project specific data quality objectives met for this analysis?	(Yes)	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

SDG: A	REVIEWER: Clare Russell	DATE: 4/11/93	PAGE 1 OF 1
COMMENTS: Metals		Level 4 Validation	

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
Case 9212L005							
B07Q13	Mercury	12/7/92	12/28/92	12/30/92	21	2	none

B-1

WHC-SD-EN-SPP-002, Rev. 1

12

CALIBRATION DATA SUMMARY - FORM B-2

92121005

SDG:	REVIEWER: CM Russell	DATE: 4/11/93		PAGE 1 OF 1	
COMMENTS: Metals				(Level 4 Validation)	
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
GFAA Calib.	Corr. Coeff.				
	Hg				none
	As				
	Se				
	Tl				
	Pb				
ICV and CCV					
	all are acceptable.			all	none

B-2

WHC-SD-EN-SPP-002, Rev. 1

12

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

~~9212~~ 9212L005

SDG:	REVIEWER: Clem Russell	DATE: 4/11/93	PAGE 1 OF 1
COMMENTS: Metals			Level 4 Validation

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
	ug/L								
PBS	calcium	102.7			mg/kg	513.5		—	—
↓	copper	1.70			↓	8.5		—	—
↓	magnesium	68.7			↓	343.5		—	—
CCB3	nickel 20.2	4.04			↓	20.2		B07Q13	(U)
ICB	potassium 1727.6	345.5			↓	1727.6		B07Q13	(U)
CCB1	sodium -180	-36			↓	-180			
CCB2	sodium -210	-42			↓	-210		B07Q13	(J)

ACCURACY DATA SUMMARY - FORM B-4

~~SDG:~~ Case 9212L005	REVIEWER: Clare Russell	DATE: 4/11/93	PAGE 1 OF 1	
COMMENTS: Metals			Level 4 Validation	
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
CLDL Std	lead	63%		none
	zinc	140%, 143%		↓
	cadmium	135%		↓
matrix spike	mercury (sample B07Q135)	129%	B07Q13	none
LCS → acceptable				none
final spike (NOMSA)				
	As - OK ✓			
	Pb - OK ✓			
	Selenium	74%	B07Q13	UJ
	Tl - OK ✓			

PRECISION DATA SUMMARY - FORM B-5

9212L005

SDG:	REVIEWER Clem Russell	DATE: 4/11/93	PAGE 1 OF 1		
COMMENTS: Metals				Level 4 Validation	
COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Anal Dup lead	B07013 (3.6)	B07Q13D (5.5)	41.2	B07Q13	none*
	*no qual. because conc. is <5xCRQL			and	
	dup is ± 2x CRQL ✓				
All other RPD are acceptable.		calc			
Field Dup → none in this package					
Field Split	B07Q13	B07Q12			none
	see attached calc sheet				
	for RPD info.				
ICP Serial Dil → all are acceptable.					none

CALCULATION SUMMARY - FORM B-6

9212L005

SDG:	REVIEWER: Clare Russell	DATE: 4/11/93	PAGE 1 OF
COMMENTS: Metals		Level 4 Validation	
Field Split Precision			

	B07Q13	B07Q12	
Al	~~57~~ 5370	7370	31.4 ✓
Sb	12.2 (U)	3.6 (UJ)	—
As	2.40	3.6	40 (±2xCRQL) ✓
Ba	52.30	57.9	10.2 ✓
Be	0.29	0.30	
Cd	1.43 (U)	0.31 (U)	—
Ca	3250	3460	3.4 ✓
Cr	9.50	43.1	127.8%
Co	840	9.3	10.2 ✓
Cu	13.20	11.4	14.6 ✓
Fe	14600	19200	27.2 ✓
Pb	3.60	3.9	8.0 ✓
Mg	3670	4040	9.6 ✓
Mn	143	177	21.3 ✓
Hg	0.05 (U)	0.05 (U)	—
Ni	13.6 (U)	27.8	—
K	1410 (U)	1710 (J)	—
Se	0.41 (UJ)	0.67 (U)	—
Ag	2.04 (U)	0.93	—
Na	165 (J)	165	0% ✓
Tl	0.41 (U)	0.56 (U)	—
V	36.0	51.5	35.4 ✓
Zn	40.4	50.5	22.2 ✓
Zr	40.8 (U)	17.2 (U)	—